DOCUMENT RESUME

ED 480 053 CG 032 626

AUTHOR	Goonan, Brian
TITLE	Overcoming Test Anxiety: Giving Students the Ability to Show What They Know.
PUB DATE	2003-08-00
NOTE	18p.; In: Measuring Up: Assessment Issues for Teachers, Counselors, and Administrators; see CG 032 608.
PUB TYPE	Information Analyses (070)
EDRS PRICE	EDRS Price MF01/PC01 Plus Postage.
DESCRIPTORS	Disabilities; *Educational Testing; *Predictor Variables; *Test Anxiety; *Testing Problems

ABSTRACT

This chapter outlines the concept of test anxiety and its impact on performance, manners in which to diagnose and provide accommodations for the disability, and many means by which to reduce the impact of test anxiety. Overall, it bears repeating that although the concept of test anxiety is relatively simple, understanding how it affects a given individual is complex and dependent on many factors. Despite its complexity, test anxiety is an important consideration as long as performance evaluations are valued as determinants for access to education, resources, and other opportunities. (Contains 33 references.) (GCP)

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ED 480 053

Overcoming Test Anxiety: Giving Students the Ability to Show What They Know

By
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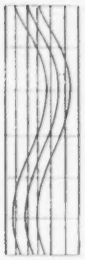

Chapter 18
Overcoming Test Anxiety
Giving Students the Ability to Show What They Know

Brian Goonan

Tests and evaluations are a nearly unavoidable part of our world. Entrance exams, aptitude tests, driver's license tests, classroom exams, and, in particular, grades are just a few examples of the assessments used throughout our society to make comparisons among individuals. Most people are not concerned about the use of grades to identify areas in need of improvement. When these grades are used to determine who will be permitted access to resources such as higher education, greater opportunities, and financial assistance, however, testing becomes a concern. It is understandable that some people experience test anxiety when faced with this determination and the seeming message that test scores impart regarding an individual's worthiness.

We are tested throughout life. As early as preschool, some schools require entrance evaluations to determine if a child is appropriate for a given program. Parents, teachers, and administrators complain of the overemphasis placed on standardized test scores to evaluate a school's worthiness for funding. This dismay over the emphasis on test scores trickles down to students. In Texas, some educators feel that too much of the curriculum is focused on preparing students to pass the TAAS (Texas Assessment of Academic Skills), one of a long line of group-administered aptitude tests. Even elementary school students feel the pressure and come to regard the TAAS as another four letter word. Given our society's emphasis on getting ahead and the function that tests have come to serve in measuring the ability to succeed, it is not surprising that many individuals have come to see tests as feared objects that threaten their well-being.

There is significant variability in the reporting of test anxiety, with some studies citing test anxiety as affecting as much as 34 percent to 41 percent of third- through sixth-grade children (Beidel, 1991; Turner, Beidel, Hughes, & Turner, 1993). Even if we accept conservative estimates, which range around 20 percent, one out of five

students in upper elementary school is likely somehow hindered in his or her ability to show what he or she knows. In reviewing the literature on the impact of anxiety on aptitude, Ball points out that "less than 10 percent of the aptitude variance is accounted for by anxiety, and probably no more than 5 percent on the average. This is nevertheless worth being concerned about: Smoking accounts for only about 3 percent of the variance associated with longevity and people feel this is important" (Ball, 1995, p.110).

Doesn't Everyone Worry About Taking a Test?

Test anxiety is more than normal worry about a test; it is a specific anxiety disorder that involves excessive amounts of concern, worry, and fear about negative evaluation during or in anticipation of performance or evaluative situations. Diagnostically, test anxiety meets the criteria for classification as a specific form of social phobia as defined by the DSM-IV (American Psychiatric Association, 1994). Individuals with test anxiety are excessively concerned with embarrassment or consequences from poor performance; seek to avoid performance or evaluative situations, or endure those situations with intense distress; and have disruptions to their normal routine or academic functioning as a result of the distress or avoidance behaviors.

Students experience test anxiety as difficulty thinking clearly, and in some cases seeming inability to do so. This mental blanking may lift once the exam is over. Before and during the test, individuals may experience physical sensations such as a racing heartbeat, upset stomach (e.g., "butterflies"), muscle tension, perspiration (e.g., sweaty palms), and headache. Irritability and restlessness may also occur. During the exam the student may misread questions, experience difficulty understanding the nature of the questions asked, and have trouble organizing his or her thoughts. Although some educators and researchers suggest that the low performance of test-anxious students is due to a combination of poor preparation and an individual's awareness of that poor preparation at test time, others would support the contention that individuals who are well prepared but experience high test anxiety have true difficulty in retrieving known information and strategies (Birenbaum & Nasser, 1994).

Liebert and Morris (1967) were perhaps the first to break down test anxiety into the two main components of worry and emotionality. The worry component comprises the cognitive aspects of anxiety, typically considered to be rooted in fears of failure, negative

comparisons to peers, and doubts about personal ability. Thoughts such as "I'll never get into college with these grades," "Why is no one else struggling with this exam?" and "Maybe I'm just not as smart as I think I am" are examples of the cognitive worry component. Later researchers have specified test-irrelevant thoughts as at least a subset of the initial worry component (Sarason, 1984). All too often families, peers, schools, and society feed the test-anxious student's concerns by emphasizing the subjective notion of performing to one's potential. Some students come to value their academic acumen as indexed partly by how little they studied; therefore, they under-report the amount of studying required in order to appear as though they earned their grades through intellect more than through preparation.

Liebert and Morris's (1967) second component, emotionality, encompasses the physiological sensations associated with arousal of the autonomic nervous system. Although their initial conceptualization emphasizes the physiological aspects of arousal, the emotionality component in actuality comprises both physiological and affective arousal. Thus, emotionality includes increased muscle tension, perspiration, cold hands, racing heartbeat, and upset stomach, as well as sensations of irritability, depression, and agitation.

Consistent with a commonly held belief that cognitions are more likely to influence emotions and physiology than vice versa, most studies I reviewed found the cognitive component of test anxiety to be more influential than the emotionality component. For example, Morris and Liebert (1970) found worry to be more strongly negatively correlated with examination grades than was emotionality. Similarly, Birenbaum and Nasser (1994) concluded that preoccupation with test-irrelevant thoughts leaves less space for the type of processing necessary for complex tasks.

Origins and Impact of Test Anxiety: A Most Unwanted Guest

In a recent review of the literature, McDonald (2001) concludes that there are no consistent findings regarding gender differences, socioeconomic differences, or race differences in the prevalence of test anxiety. There is also no generally accepted causal pathway for the development of test anxiety. Test anxiety is not a simple matter of students who are test anxious doing poorly, and those who are not test anxious doing well. This is largely because test anxiety is thought to be based on a continuum of impairment rather than as being either present or not present (McDonald, 2001). Additionally, the effects of test anxiety

on performance are thought to be multidetermined and complex (Hodapp, Glanzmann, & Laux, 1995). Regardless of its causes, once test anxiety is present, it seems to form a self-sustaining feedback loop. Test anxiety decreases performance on tests (or increases inefficiency of preparation), which negatively affects self-esteem and confidence; this supports a belief in decreased likelihood for success (reinforcing the worry component), which, in turn, further increases test anxiety.

In some cases the very thing we think might improve confidence may actually serve to produce or increase anxiety. For example, Mueller and Dweck (1998) found that 10- to 12-year-olds who are praised for test performance tend to choose tasks that allow them to demonstrate their abilities. These children hold strong beliefs that their test scores represent their intelligence, and they would lie to another child if they received a poor score. Children praised for their effort instead of their performance do not return to the same tasks; rather, they choose tasks that allow opportunities for learning. The idea that praising children for effort rather than achievement enhances learning is consistent with findings that praise for performance also undermines intrinsic motivation (Deci & Ryan, 1985).

The effects of test anxiety take on different forms depending on whether students are high or low achievers, according to Birenbaum and Nasser (1994), who evaluated the qualitative and quantitative aspects of student performance on a math test. They found that highly anxious, high-achieving students made more nonserious errors on complex items than did highly anxious, low-achieving students, who made more serious errors. Birenbaum and Nasser take these results to suggest that individuals with backgrounds of high and low achievement need to be treated differently in terms of intervention. They suggest that the highly anxious, high-achieving student would benefit most from learning test-taking skills, such as practicing effective coping methods for different types of formats. The highly anxious, low-achieving student would benefit most from effective learning strategies. Both groups would benefit from therapies that focus on cognitive coping techniques in the face of stress.

Given that anxiety is based on an individual's perception of lack of success or fear of failure, rather than just his or her innate abilities, intellectually gifted students also are vulnerable to test anxiety (Zeidner & Schleyer, 1999). Gifted students' test anxiety does not affect their academic performance to the level seen with nongifted, test-anxious students; however, relative to their peer group, all test-anxious students have a low academic self-concept. Further, high-achieving and

intellectually gifted students often self-select into more competitive environments as their schooling progresses. Therefore, the long-term impact of test anxiety on lowering students' self-concepts and the likely negative impact on their academic success cannot be overlooked.

Test anxiety does not have a direct impact on academic achievement, but it may manifest differently based on many factors, including familial background, level of achievement, motivation, and intellectual giftedness. Sources of support have been shown to play a mediating role in the impact of test anxiety (Orpen, 1996). Interventionists would do well to attend to the various expressions test anxiety may take and to design intervention plans that fit each situation.

Measurement: When Is Anxiety More Than Just the Jitters?

A full review of the measures that are used to assess and identify test anxiety is beyond the scope of this chapter. For those who are interested, Anderson and Sauser (1995) provide a thorough review of the literature and the measures that were available by the mid-1990s. Although Anderson and Sauser recommend the Revised Test Anxiety Scale as "state of the art, as of this writing" (p. 22), the Test Anxiety Inventory (TAI; Spielberger, 1980) appears to be the most widely used instrument according to the test anxiety literature. One limitation of the TAI is that it was designed for and normed on high school and college students. The state-anxiety component of Spielberger and associates' (1973) State-Trait Anxiety Inventory for Children (STAIC) offers one perspective on the younger student's response to situational anxiety. The Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 2000) also offers a window into the cognitive, affective, and physiological experiences of children who experience anxiety.

One of the drawbacks to all anxiety-specific test instruments is their face validity. In other words, the questions on the inventories are addressing exactly what you would expect. Sample items tend to be worded like "I have difficulties concentrating on tests" or "I feel nervous during major exams." For the student who would like to fake problems in order to garner accommodations (such as extended time on the SAT), it would not be difficult to determine how to respond. Although some would question whether an individual would label himself or herself as "disabled" for the purpose of garnering accommodations, many students feel pressured to get into the top colleges at any cost. Anecdotal data concerning college admissions of students who took the SAT with

accommodations for learning disabilities or attentional difficulties do not suggest that the special accommodations indicator affects acceptance if a student's scores are in the appropriate acceptance range.

Under the Americans With Disabilities Act (ADA) and Section 504 of the Rehabilitation Act of 1973, individuals with disabilities are protected from discrimination and are assured services. Test anxiety meets the two criteria for a disability as outlined under ADA and Section 504 (Zuriff, 1997). First, it is diagnosable as a mental disorder under DSM-IV. Second, inherent in the DSM-IV diagnostic criteria are substantial limitations on the individual's major life activities (e.g., situational avoidance, disruptions to normal and academic routines). Zuriff argues that individuals with test anxiety are potentially limited in any life endeavor that requires taking tests, such as for application, credentialing, licensure, or training. Thus, at the secondary school and college levels, individuals who experience test anxiety should be eligible to receive accommodations and modifications in their classes when taking tests and quizzes. To my knowledge, no court cases have directly challenged the diagnosis of test anxiety.

The Educational Testing Service (ETS) allows for testing accommodations if the following criteria for the documentation of a disability are present (see www.ets.org/disability/criteria.html):

1. Current documentation by a qualified professional
2. Comprehensive documentation, including evidence for early impairment; evidence for current impairment; ruling out of alternative diagnoses or explanations; provision of relevant testing; identification of DSM-IV criteria; documentation with a specific diagnosis; and inclusion of an interpretive summary
3. A rationale for each accommodation recommended

The ETS has also indicated that individuals wishing accommodations on standardized tests must also be receiving similar accommodations in their present settings. In other words, students receiving no modifications in their present educational setting cannot suddenly need modifications for a specific standardized test.

It is important to rule out alternative diagnoses. Students affected by learning disabilities, attentional problems, and depression often have difficulties with the process of encoding information during studying, giving them a tenuous grasp of the information before any evaluation takes place. Students with attentional difficulties or depression often experience difficulties concentrating and become internally or externally

distracted during exams, for reasons that are not exam-specific. Additionally, the student with depression is at particular risk for the exacerbation of the negative self-concept feedback loop, or cycle, that accompanies test anxiety. Too often learning disabilities, attentional problems, depression, or anxiety go undetected or under-reported, and therefore undertreated.

Interventions: How to Stop the Negative Feedback Loop

Many researchers have evaluated effective interventions for test anxiety across a variety of age groups (Beidel & Turner, 1999; Birenbaum & Nasser, 1994; Hobson & Thompson, 1996; Syncamore & Corey, 1990; Thorne, 2000; Vagg & Papsdorf, 1995; Wilkinson, 1990). Most of these studies emphasize the worry component of the Liebert and Morris (1967) model. Many studies point to the importance of test-irrelevant thoughts, primarily self-directed negative thoughts, as interfering with attention and resources during the test-taking process. Accordingly, most interventions focus on increasing cognitive restructuring. Nevertheless, most practical interventions focus on improving the whole picture of an individual's test-taking behaviors.

Although many researchers would agree that inadequate test preparation does not sufficiently explain the low test scores of students with test anxiety (Ball, 1995), at least some portion of students with test anxiety show a pattern of poor test preparation that does not enhance their academic performance in the face of test anxiety (Birenbaum & Nasser, 1994). If test anxiety makes it difficult to retrieve information, it is logical to focus at least some intervention on putting the information firmly in place before the test anxiety tries to shake it loose. There are many programs and books focusing on productive study habits, and many colleges and universities offer free seminars and services to students to help them learn how to prioritize, organize, and schedule so that they learn best. Increasingly, high schools, middle schools, and even elementary schools are beginning to help their students with organizational and study skills. Planning and organizational skills are particularly important if a student has shown tendencies toward avoidance behaviors and self-defeating behaviors, such as procrastination and not remembering or not completing assignments.

One of the better-known study skill methods is SQ3R. In this method, students are asked first to *S*urvey the material and *Q*uestion what they see. This first step moves learning from a passive process of reading and decoding to an active process of information finding. The

first R is to ***R***ead the material with the questions in mind. The second R involves ***R***eviewing the information gathered during the reading process and answering the initial questions they posed to themselves. Students are encouraged to divide the task of reading longer chapters into manageable pieces. The third R is to ***R***ecite the information as a means of further internalizing the material. I typically add a fourth R of ***R***ewriting small cues to economize the information.

Besides the benefits of developing a more thorough and accessible grasp of the information to be recalled, adequate preparation also assists with desensitization to the feared stimulus, namely tests. When possible, using old exams and practice tests under simulated test conditions (e.g., taking a timed practice exam in a lecture hall where the test is to be administered, under quiet conditions) would further desensitize the student to the potential impact of test anxiety. Test preparation courses, such as the Princeton Review, that incorporate multiple practice tests given under simulated conditions help in the desensitization process for nationally administered standardized tests. Desensitization has been shown to help reduce test anxiety and improve grades (Gonzales, 1995). Informally structured programs of desensitization are also effective, according to Thorne (2000), who found that the use of extra credit exercises (e.g., pop quizzes) helps reduce test anxiety.

As I have reiterated throughout this chapter, individuals who experience test anxiety suffer most from the negative thoughts and self-perceptions of low academic competence. These students overemphasize the effect of test results on their self-worth, their appearance to peers, and their possibilities for success. Derogatory statements such as "If I can't do well on this test, then I don't deserve to go to college," "I am so stupid; how do people put up with me?" and "This [test] is horrible" are just a sample of comments students with test anxiety make on a routine basis. In the face of this pressure, it is no wonder they are more distracted during tests, have fewer resources from which to draw for confronting challenging tasks, and give up earlier on tests than do individuals who are less test anxious.

Test-anxious students can learn several cognitive behavioral techniques, such as challenging irrational beliefs or thought-stopping combined with self-reinforcing statements, self-instruction, and coping strategies when faced with the sensation of anxiety (Ellis & Grieger, 1977; Meichenbaum, 1972). Although the specifics of each technique differ, the overall goals are similar. The primary goal of cognitive behavioral interventions for anxiety is to help the students recognize irrational or maladaptive thoughts and replace those thoughts with more

realistic versions of the initial perception. For example, an irrational thought such as "If I fail this exam, I might as well drop out of school" would be "stopped" and replaced by "I would like to do well on this exam, but if I don't, I will learn from my mistakes and be better prepared for the next exam," or "I studied the best I know how. If I don't do well, that is a signal to get extra assistance." Here, the student reorganizes the unproductive worry—which too often is a distraction during the test taking—into productive concern and establishes a plan of action. Similarly, if the student encounters difficulties with a test, he or she is encouraged to replace negative thoughts such as "Great! Now I know I am going to fail!" with "Hmm. I'm not sure of that answer, so I'll come back to it later." Fletcher and Spielberger (1995) support the notion that both rational emotive behavior therapy and cognitive therapy reduce individuals' ratings of test anxiety.

These individuals experience a positive impact on their self-esteem to the degree that they decrease berating self-statements.

Even under the best of conditions, individuals with test anxiety are likely to experience intermittent bouts of elevated physiological arousal (e.g., butterflies in the stomach). Overt and covert desensitization techniques can alleviate this arousal. Overt desensitization involves experiencing the actual anxiety-provoking situation under controlled situations, such as taking practice exams.

In covert desensitization the student visualizes the feared situation and practices self-soothing techniques, such as deep breathing exercises or progressive muscle relaxation, to counter the physiological effects of the anxiety experience. To practice deep breathing exercises, an individual can either sit up straight or lie down flat so that the chest and abdomen are in a straight line. The individual then places one hand on his or her chest and one hand on his or her abdomen. The focus is on gentle, regular abdominal breathing; the hand on the chest should remain relatively still while the hand on the abdomen rises and falls at a regular rate. Gentle, regular abdominal breathing with a focus on slightly longer exhalations than inhalations helps to decrease the autonomic arousal that accompanies test anxiety. Biofeedback, which focuses on the reduction of physiological arousal, has also been shown to help increase students' GPAs and to help reduce emotionality, especially when combined with cognitive therapy (Vagg & Papsdorf, 1995).

The goal of early preparation, desensitization, relaxation techniques, and other forms of covert and overt practice is not to eliminate anxiety but to reduce it to a manageable level. Most individuals who work in competitive or evaluative situations suggest that moderate

amounts of anxiety actually facilitate good performance in academic and athletic endeavors (Ball, 1995; Murphy, 1996; Yerkes & Dodson, 1908). Some degree of anxiety heightens our senses and awareness, thereby heightening our performance. Therefore, one cognitive restructuring technique is to come to view moderate amounts of anxiety as healthy and helpful. Statements such as, "This anxiety lets me know that I would like to do well and that I care about my studies," or "A little anxiety will help me focus and concentrate" help a student to accept some anxiety as a natural part of wanting to rise to the occasion.

Too often individuals who experience test anxiety are not adequately attending to their physiological needs. They reduce their usual amount of sleep and exercise, and do not eat a balanced diet. Compromising a healthy, balanced lifestyle is stressful in and of itself and will only exacerbate an already difficult situation. Sleep allows the mind to recharge and prepare for analysis and integration of more information and strategies. Exercise releases endorphins, which enhance mood, and gives us a well-needed break from hours of study. Additionally, we are likely to continue to process information while exercising. It is not uncommon for an individual to understand a technique or to synthesize information only after he or she is able to step away from the material. Finally, maintaining a balanced diet will help to replenish those vitamins and minerals that stress depletes.

Although many of the previous examples of test-anxiety coping techniques are geared toward older students, programs geared toward children often contain similar components but are altered in presentation to be more developmentally appropriate and enjoyable. For example, the Testbusters program (Beidel & Turner, 1999) emphasizes the SQ3R method and is geared toward fourth- through seventh-grade students. The Rain or Shine approach developed by Hobson and Thompson (1996) for elementary school students uses common art materials to express and explore test anxiety. Students draw raindrops, which represent irrational thoughts that come to them when they are taking tests. Then they draw an umbrella, which represents alternative thoughts that protect them from getting wet during the test. The mark of good child intervention is the level to which the child can learn beneficial skills in a way that is enjoyable. Many of the skills outlined earlier in this chapter are readily adapted to children.

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Guiding Principles for Intervention: "No, Really, What Specifically Should I Do?"

As this chapter describes, there are several techniques for and many well-written texts on addressing test anxiety (e.g., Johnson, 1997). Whatever techniques you introduce to students, keep in mind the following general guidelines:

1. Identify the problem. Test anxiety typically comes to light when there is a discrepancy between a student's perceived ability and his or her outcome on tests. Many factors can contribute to an individual not performing to his or her ability. Learning disabilities, attention deficit/hyperactivity disorder, social difficulties, depression, and anxiety are just a few of the elements that can affect performance. Referring the student for a good evaluation, including cognitive, academic, behavioral, and emotional components, is a recommended first step for addressing any perceived discrepancy between ability and performance.
2. Encourage more than adequate preparation. Despite some degree of contradictory evidence in the literature, it is clear that a test-anxious student benefits from having the best possible grasp of the material before taking an exam. By teaching students good study skills (e.g., outlining, SQ3R), good study habits (e.g., clean work area, organized task and materials, effective time management), and a willingness to seek further assistance with difficult information, you give them essential tools to succeed despite test anxiety. To the extent that test anxiety knocks information loose or causes difficulties in retrieving information, the individual with test anxiety will need to have that much firmer a foundation.
3. Use desensitization techniques. Similar to treatments for other anxiety disorders, systematic desensitization and graduated exposure help reduce situation-specific anxiety. Pop quizzes, practice exams under timed conditions, and pressured responses (e.g., a tutor, parent, teacher, or peer intentionally second-guessing a correct response) are examples of ways in which you can provide graduated exposure to an anxiety-provoking situation.
4. Encourage relaxation. Because anxiety has physiological correlates, recommend that test-anxious individuals engage

in visualization, progressive muscle relaxation, or other relaxation techniques to gain greater regulation over the physiological sensations accompanying anxiety. Even with adequate preparation, the student with a history of test anxiety is likely to experience the familiar physiological sensations of a racing heart, cold hands, sweaty palms, and tense muscles, triggering the test anxiety–negative self-concept cycle. Also emphasize that some degree of anxiety is normal and perhaps slightly helpful in a test situation to help test-anxious students to relax.

5. Use the system. There is more than one way to take exams and standardized tests (including the SAT). For students with documented test anxiety or performance anxiety, consider accommodations such as untimed or extended time formats, small-group administration, oral administration, or bulleted essays to help them give a more accurate indication of their knowledge. Decide on accommodations based on a thorough evaluation of an individual's difficulty and techniques that have proved beneficial in the past.

Summary

Though many feel that the use of tests is overstressed in our society, the truth is that tests are inherent in evolution. Darwin's theory of survival of the fittest describes species as evolving from a test of which strain has the most adaptive survival mechanisms to perpetuate a given gene pool. Humans evolved into a separate species based on tool usage, intellect, cunning, and the perpetuation of knowledge. It is only fitting that one of the tests of our species is to determine which individuals have the intellectual and emotional capacity, as well as the behavioral discipline, to succeed.

This chapter outlines the concept of test anxiety and its impact on performance, manners in which to diagnose and provide accommodations for the disability, and many means by which to reduce the impact of test anxiety. Overall, it bears repeating that although the concept of test anxiety is relatively simple, understanding how it affects a given individual is complex and dependent on many factors. Despite its complexity, test anxiety is an important consideration as long as we continue to value performance evaluations as determinants for access to education, resources, and other opportunities (such as employment and licensure). It is therefore incumbent on educational and evaluative

institutions to teach individuals effective methods to address their anxiety and to assist them in developing independent means to overcome its effects.

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